infection, namely, through the tonsils, many cases of which have been observed, and experimental reproduction of which in animals has been achieved.

In conclusion, we may assume from the evidence at hand "that human and bovine tuberculosis are but slightly different manifestations of the same disease, and that they are intercommunicable. Bovine tuberculosis is, therefore, a menace to public health.

"The eradication of bovine tuberculosis is amply justifiable from a purely economical standpoint; viewed in its bearing on human health it becomes a public duty."—F. P. G.

HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF

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Insects and Human Diseases.—C. VON HOLUB (*Centralblatt für Bakteriologie*, etc., Band xxx., p. 284) makes the interesting communication that he has succeeded in infecting different species of insects with the streptobacillus of Ducrey, the cause of ulcus molle, in more than one thousand cases. Within several days after inoculation each insect became literally a package of pure culture of the organism. Every part of the organism—head, thorax, abdomen—was filled with the bacteria, and, although in the beginning there was in the pus of the ulcer a mixture of bacilli and cocci, in the insects there was nothing but pure cultures of the streptobacillus. Among the inoculated insects, those which were fed lived not longer than twenty-one days; those that were not fed lived only two weeks. Twelve hours after infection the development of the micro-organisms could already be observed.

The following proved to be susceptible to infection: Orthoptera, rhynchota, hemiptera, coleoptera, lepidoptera, diptera, and hymenoptera. Inoculation was performed by means of a very slender and sharp sterilized needle. The infected males conveyed the disease to members of the other sex, and in cages where numbers of insects were kept with only one that was inoculated all the rest became infected. Feeding with pus also caused infection.

The Significance of the Colon Bacillus in Drinking-water.—W. G. SAVAGE (*Journal of Hygiene*, July, 1902, p. 320), in an interesting article on the significance of the colon bacillus in drinking-water, quotes Jordan as objecting to that organism as a true index of sewage contamination, since it may be found in spring-water beyond any suspicion of contamination. Savage believes that it is not so much the presence of B. coli which is of positive value as the number present; that the kind of water in which this organism is found is of great importance; that a number of bacilli per litre of water from one source may be passed as safe, or at least as not evidence of danger of contamination, while the same number would be sufficient to condemn water from another source; and that the exact point of the water-supply from which the sample is collected is of great importance. Frequently results differing considerably are obtained with samples taken from source and tap, respectively, and with arbitrary standards the one would be condemned and the other passed. His conclusions are as follows:

1. In estimating the significance of B. coli in a sample of water, the particular kind of water must be carefully considered; also the exact part of the system from which the sample was taken.

2. The number of B. coli present is an essential factor, but arbitrary standards of the number of this organism allowable per litre are of but little value, and are fraught with considerable possibilities of error unless the particular kind of water and the local conditions are considered in every case.

3. Waters which show no B. coli in 50 c.c. are of a high degree of purity, and, therefore, the proved absence of this organism in this amount, and, still better, in larger quantities, is of great value.

4. B. coli should be absent from at least 50 c.c. of spring-water; possibly from greater amounts.

5. In upland surface waters the presence of B. coli in 40, 10, or even 2 or 1 c.c. means contamination, but not necessarily a contamination which it is essential to prevent. It may be from contamination with the excreta of animals grazing on the gathering areas, and is by no means necessarily from sewage or other material containing specific organisms of infection. Further, there is no evidence that an amount of such animal contamination sufficient to cause a considerable number of B. coli per litre to be present in the water is harmful.

If B. coli are present in numbers greater than say 500 per litre (or even in that amount) such a water is suspicious, as it is rare to get so many B. coli in a water purely from the kind of animal contamination indicated, and further investigation is desirable. In filtered samples the number of B. coli is, as a rule, considerably reduced.

6. Chemical analysis cannot be considered a delicate method of detecting organic contamination, because it may fail with many waters in which pollution is undoubtedly taking place.

7. In surface wells, B. coli in large numbers indicate a surface or other contamination, generally very undesirable, if not actually dangerous. A knowledge of the position and the possibilities of contamination is very desirable in giving an opinion as to the purity of the water.

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